U.S. Department of Transportation

National Highway Traffic Safety Administration

ODI RESUME

OFFICE OF DEFECTS INVESTIGATION

NHTSA

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Investigation: PE 13-010
Date Opened: 04/26/2013 **Date Closed:** 12/11/2013
Investigator: Steve Mchenry **Reviewer:** Jeff Quandt
Approver: Frank Borris
Subject: Rear suspension knuckle fracture

MANUFACTURER & PRODUCT INFORMATION

Manufacturer: Chrysler Group LLC
Products: Model Year 2003 - 2010 Dodge Viper
Population: 9,670

Problem Description: Consumers allege loss of control incidents caused by rear knuckle failure while driving.

FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
Complaints:	4	8	10**
Crashes/Fires:	3	7	8**
Injury Incidents:	1	1	1**
Number of Injuries:	1	1	1**
Fatality Incidents:	0	0	0

** Total eliminates duplicates received by ODI and manufacturer.

ACTION / SUMMARY INFORMATION

Action: This Preliminary Evaluation has been closed.

Summary:

ODI opened PE13-010 on April 26, 2013, to investigate two complaints alleging loss of control crashes caused by rear suspension knuckle failure in model year (MY) 2005 and 2006 Dodge Viper vehicles. The incidents described in the complaints occurred in November and December 2012. Chrysler's response to ODI's Information Request (IR) letter for PE13-010 indicates that the left and right rear knuckles used in MY 2005 and 2006 Dodge Viper vehicles were used in MY 2003 through 2010 Dodge Viper SRT-10 vehicles and in all Dodge Viper Competition Coupe and ACRX race cars (see Figure 1 of attachment to this resume for a view of the rear suspension in the subject vehicles). Chrysler's response included information about 8 reports related to rear knuckle failures, including the 2 incidents identified by ODI in the opening resume for PE13-010. In addition, after PE13-010 was opened, ODI received 2 additional complaints resulting in a total of 10 incidents of rear knuckle failure in MY 2003 through 2010 Viper vehicles, including 8 alleging crashes.

Based on its review of physical evidence from field inspections of 6 of the 8 incident vehicles identified in its response, including the two incidents that were the basis for ODI opening PE13-010 (VOQs 10492180 and 10492169/10491122), Chrysler concluded that collision forces were the causal factor of rear suspension control knuckle failure. Chrysler's assessment was primarily based on examination of knuckle fracture surfaces, as well as evidence of wheel rim damage that would indicate impact loading of the affected suspension components. Each of the fracture surfaces examined by Chrysler displayed clean, granular fracture surfaces indicative of single event, overload failure. None of the parts showed any indication of fatigue crack growth. In addition to the 6 vehicles inspected by Chrysler, ODI obtained a fractured knuckle from a recent incident involving a MY 2004 Viper (VOQ 10510248). NHTSA's Vehicle Research and Testing Center in Ohio submitted this part to a laboratory for fracture surface and metallurgical analysis. The analysis concluded that there was no evidence of fatigue in the part and that the fracture was due to a single overload event (see Figures 2-4 in attachment to this resume). Analysis of the fracture surfaces found evidence of a mix of load states, with some failures associated with rear toe links in tension

(Figures 2-4) and some in compression (Figures 5-6). Seven of the 8 incidents in which the side of the knuckle failure was identified involved right knuckles, the side that is generally most common for impact failures involving wheel and suspension components. The single, left side failure was associated with an incident involving an impact with a concrete barrier dividing highway travel lanes. Analysis of the failure data indicated these are random events and do not show any clear patterns related to vehicle build range, vehicle age or mileage.

Examination and testing of failed knuckles have not identified evidence of a manufacturing or design defect in the parts. Accordingly, this investigation is closed. The closing of this investigation does not constitute a finding by NHTSA that a safety-related defect does not exist. The agency will continue to monitor complaints and other information relating to the alleged defect in the subject vehicles and take further action in the future if warranted.

VOQs associated with this investigation: 10523321, 10510248, 10492180, 10492169 (duplicate to 10491122).

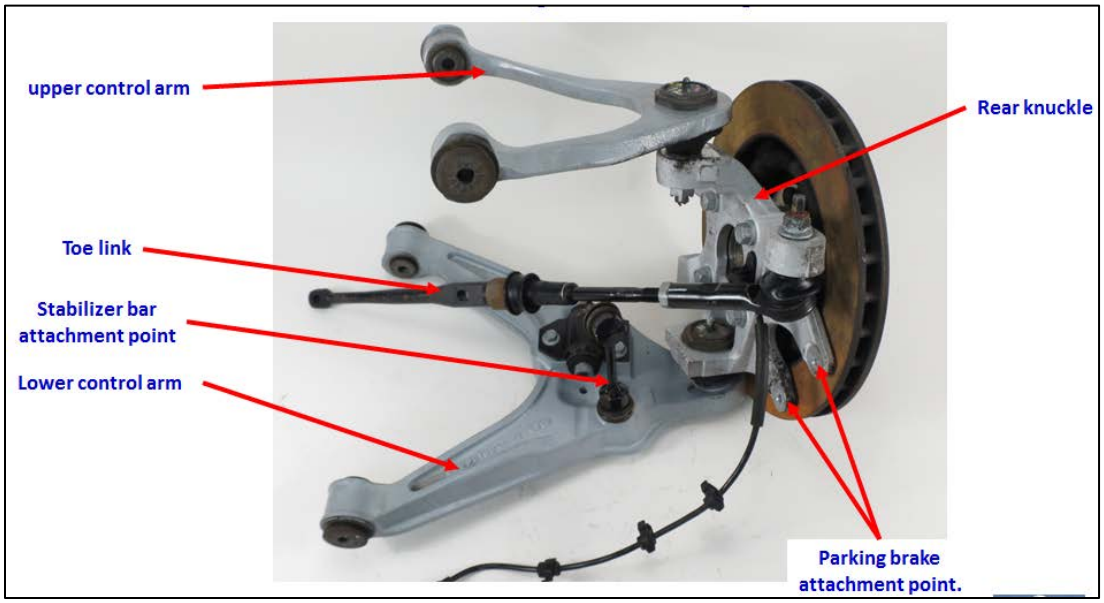

Figure 1. Right rear knuckle viewed from rear.

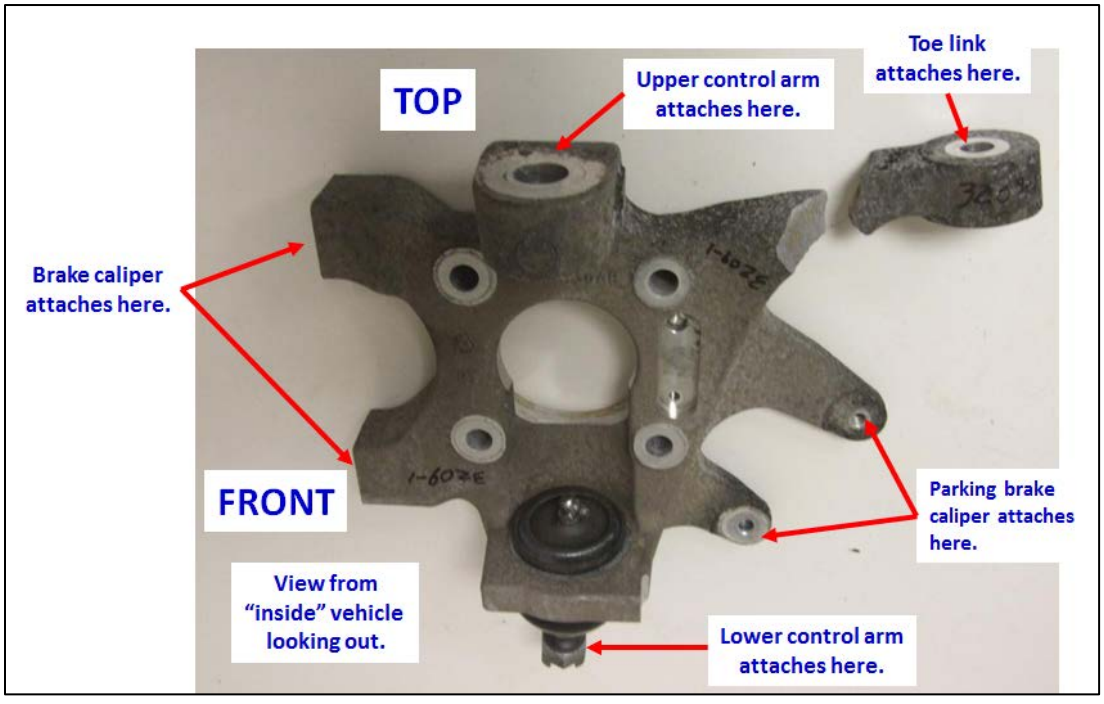

Figure 2. Right rear knuckle with fractured toe link attachment arm.

Figure 3. Fracture surface, rear knuckle toe link attachment arm (VOQ 10510248).

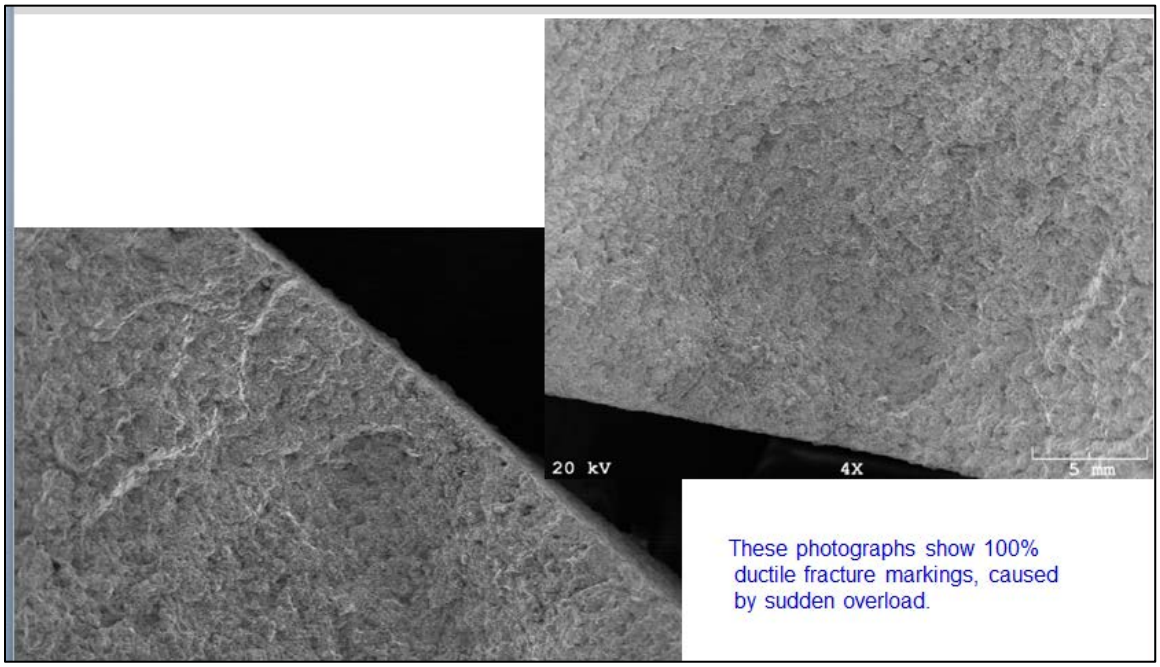

Figure 4. Low magnification Scanning Electron Microscope fracture surface images (VOQ 10510248).

Figure 5. Estimated crack initiation point and propagation direction

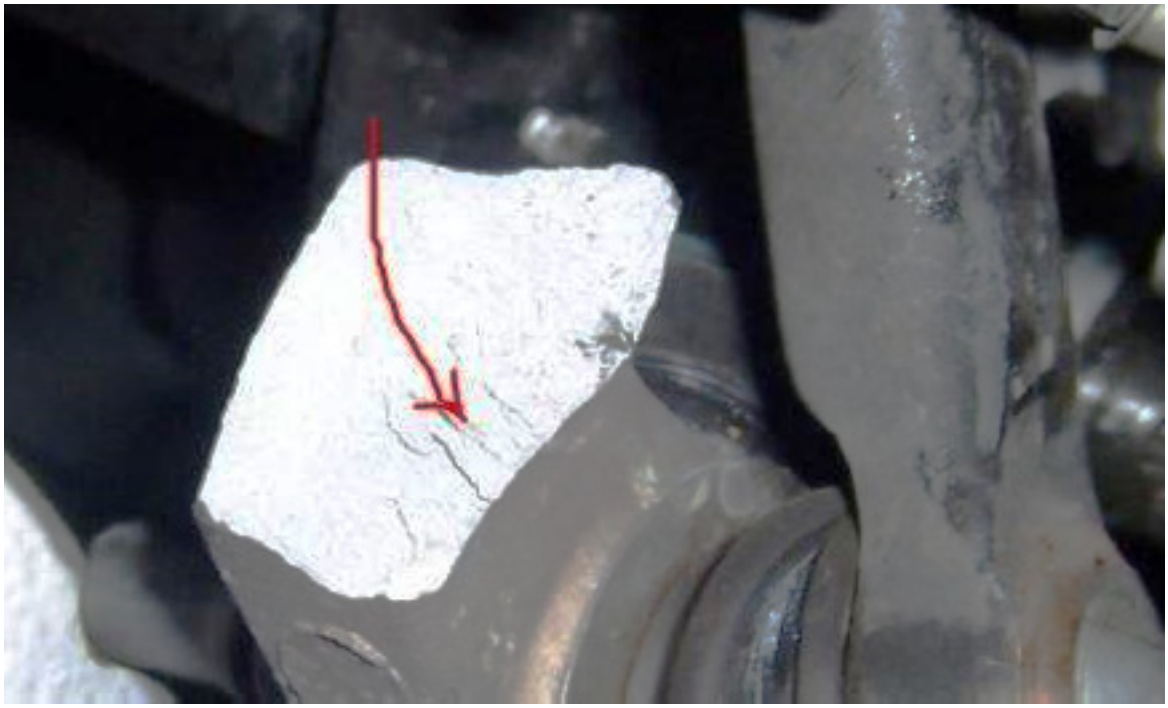

Figure 6. Estimated crack initiation point and propagation direction